

CHAPTER 2: PURPOSE AND NEED

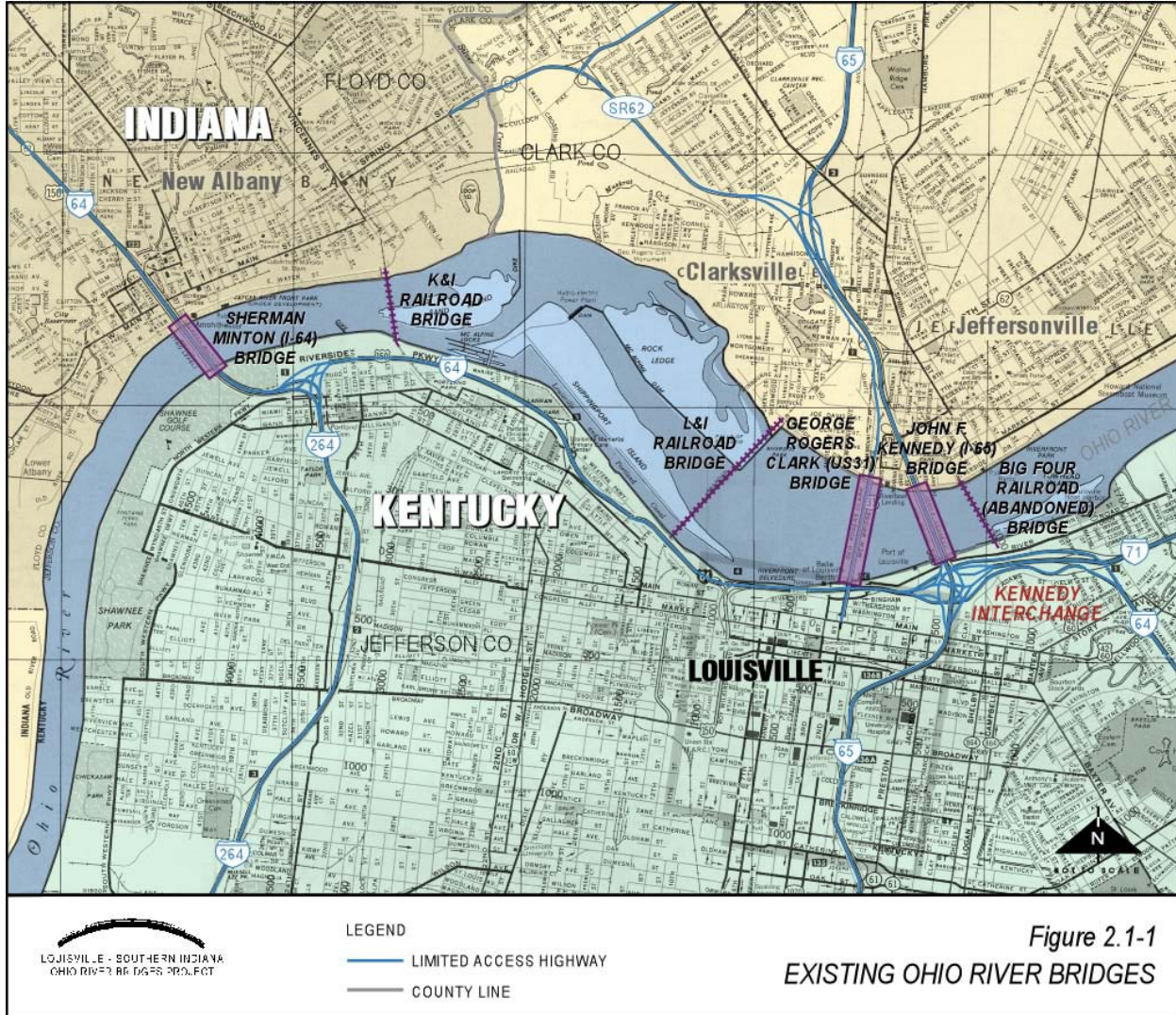
The purpose of this proposed action is to improve cross-river mobility between Jefferson County, Kentucky and Clark County, Indiana. Several specific factors demonstrate the need for action, including:

- Inefficient mobility for existing and planned growth in population and employment in the Downtown area and in eastern Jefferson and southeastern Clark Counties;
- Traffic congestion on the Kennedy Bridge and within the Kennedy Interchange;
- Traffic safety problems within the Kennedy Interchange and on the Kennedy Bridge and its approach roadways;
- Inadequate cross-river transportation system linkage and freeway rerouting opportunities in the Eastern portion of the LMA; and
- Locally adopted transportation plans that call for two new bridges across the Ohio River and the reconstruction of the Kennedy Interchange.

2.1 Project Setting

The Ohio River, which has served for decades as a natural, commercial and recreational resource for the LMA, also has served as a natural barrier to travel between the Indiana and Kentucky portions of the metropolitan area. In the past century, several bridges have been built across the Ohio River to provide transportation access between Clark and Floyd Counties in southern Indiana and Jefferson County in Kentucky. (See Figure 2.1-1) Currently, two bridges—the L&I and K&I Railroad Bridges—provide freight rail connections across the Ohio River, while three bridges provide roadway access. The John F. Kennedy Memorial Bridge currently carries I-65 traffic across the river between Jeffersonville, in Clark County, Indiana, and Downtown Louisville, in Jefferson County, Kentucky. The Kennedy Bridge has four northbound lanes and three southbound lanes, with reduced two- to four- foot shoulder widths (made necessary to accommodate the fourth northbound lane in 1996). The George Rogers Clark Memorial Bridge carries U.S. 31 across the river just downstream from the Kennedy Bridge, with two (2) nine and one-half foot lanes in each direction and no shoulders. The Clark Memorial Bridge also provides five foot sidewalks that narrow to three feet where bridge diagonals pass through them. Finally, the Sherman Minton Bridge carries I-64 traffic across the Ohio River downstream of Downtown Louisville, between New Albany in Floyd County, Indiana, and western Louisville. The Sherman Minton Bridge has three lanes in each direction, with no effective shoulders. No roadway bridges are provided across the Ohio River upstream of Downtown Louisville within the LMA.

The three existing Ohio River roadway bridges within the LMA are located primarily in densely populated urban areas. Both the Kennedy and Clark Memorial Bridges are located adjacent to Downtown Louisville in Kentucky and Downtown Jeffersonville and Clarksville in Indiana. The Sherman Minton Bridge is located adjacent to Downtown New Albany, Indiana, and a densely populated area of western Louisville.



These facilities, as well as the Kennedy Interchange in Kentucky, where I-64, I-65 and I-71 converge at the foot of the Kennedy Bridge, are located in close proximity to a variety of land uses, including concentrated commercial areas, historic residential and commercial districts, active and abandoned industrial areas, parks and recreational areas. Much of the connecting interstate freeway system on both sides of the river, including the Kennedy Interchange, was built on fill (as opposed to structures), severing historic community connections and limiting pedestrian and recreational access to the Ohio River.

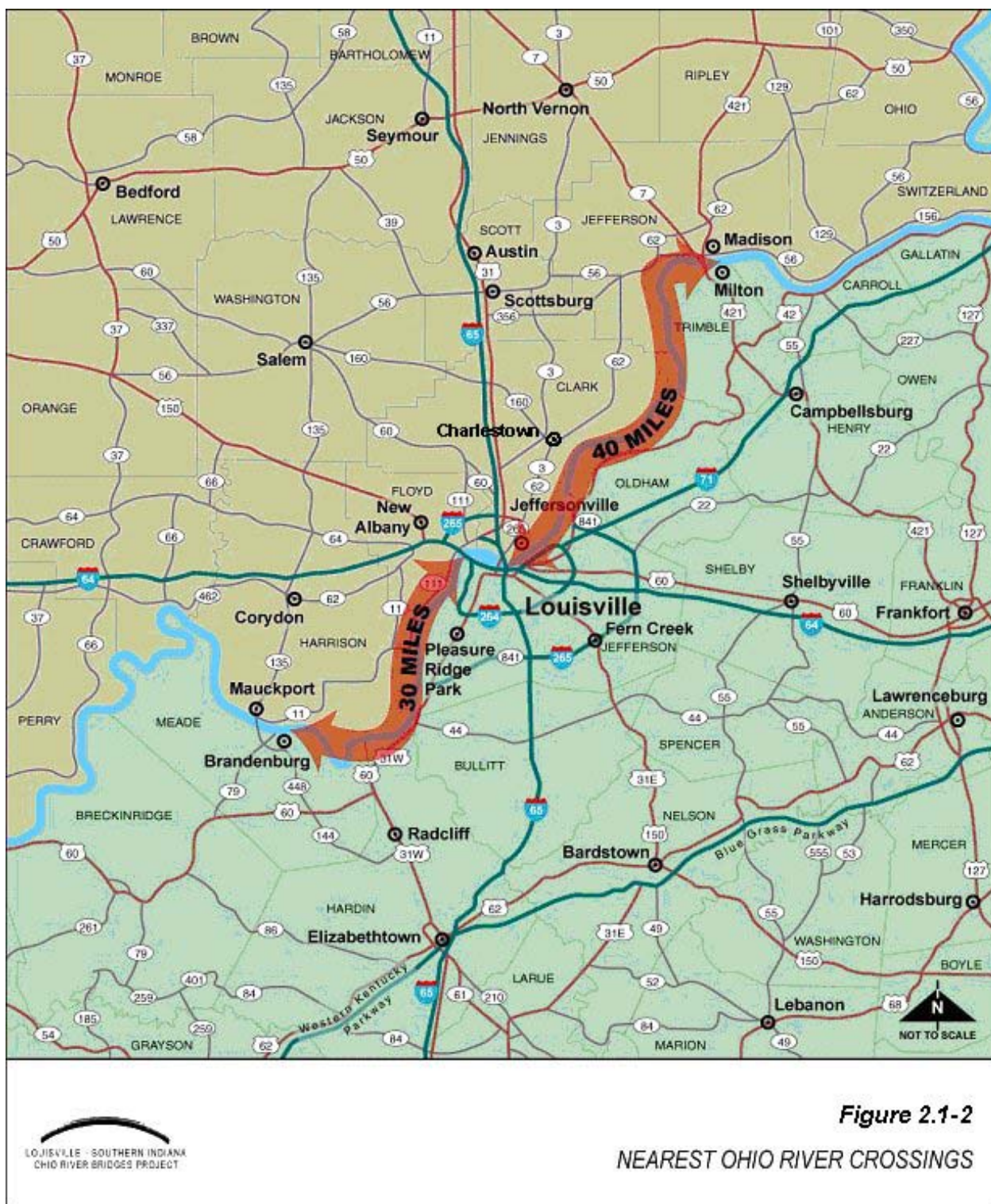
The Transit Authority of River City (TARC) provides public transportation across the Ohio River in the LMA. Currently, TARC operates six bus routes across the Ohio River. Three routes use the Sherman Minton Bridge (I-64) and carry a total of approximately 130 passengers per weekday on 26 one-way trips. Three routes use the Clark Memorial Bridge (U.S. 31), serving approximately 335 weekday passengers in aggregate on 58 one-way trips. Pedestrian access is provided on two narrow walkways on the Clark Memorial Bridge. Bicycle travel is

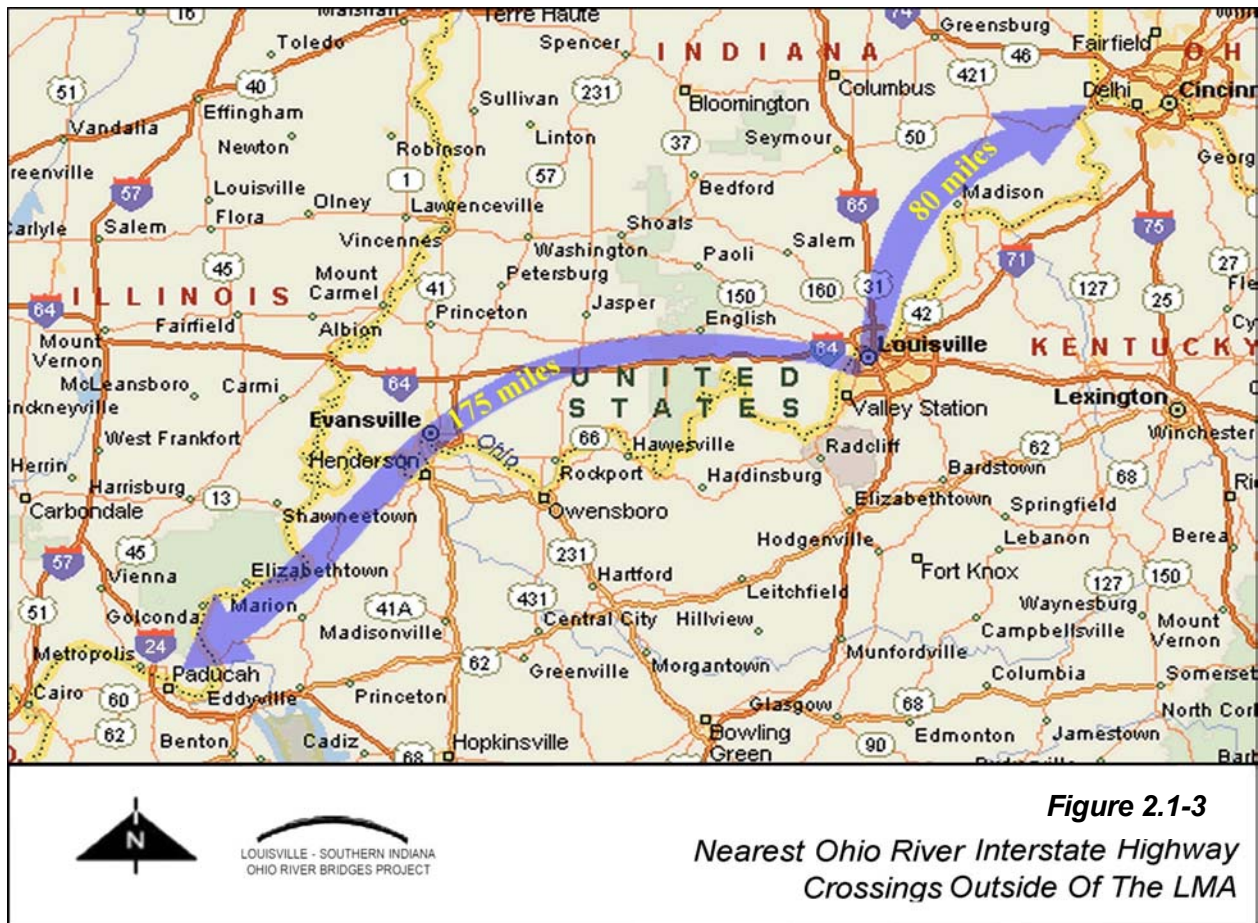


accommodated in the driving lanes on the Clark Memorial Bridge. Pedestrian and bicycle travel is prohibited on both the Kennedy and Sherman Minton Bridges. No other cross-river transportation access is provided in the LMA other than on the three existing roadway bridges and the two railroad bridges.

The nearest cross-river transportation access upstream of the LMA is provided by the Madison/Milton Bridge (U.S. 421) between Madison, Indiana and Milton, Kentucky, approximately 40 miles northeast of the Kennedy Bridge in Downtown Louisville. (See Figure 2.1-2) This weight-restricted bridge has one narrow traffic lane in each direction. The closest interstate highways to the U.S. 421 bridge is I-65, approximately 25 miles west at Austin, Indiana, and I-71, approximately 21 miles south near Campbellsburg, Kentucky. The nearest cross-river transportation access downstream of the LMA is provided by the Matthew Welsh Bridge between Mauckport, Indiana and Brandenburg, Kentucky, approximately 30 miles southwest of the Sherman Minton Bridge in western Louisville. The Matthew Welsh Bridge has one traffic lane in each direction.

The closest interstate highway crossing of the Ohio River from this bridge is I-275, approximately 80 miles to the northeast near Lawrenceburg, Indiana, which is just west of Cincinnati, Ohio. The nearest interstate highway crossing of the Ohio River from this bridge in Kentucky is I-24, near Paducah, approximately 175 miles to the southeast. (See Figure 2.1-3.)





The LMA also is currently served by two partial circumferential freeway systems. (See Figure 1.1-2, in Chapter 1.) I-264 (the Watterson Expressway) is the “inner beltway” freeway around Louisville in Jefferson County, Kentucky. Its western terminus is located at I-64 in western Louisville, at the point at which the Sherman Minton Bridge carries I-64 traffic across the Ohio River. Its eastern terminus is located at I-71 in eastern Louisville, within 1.25 miles of the Ohio River; there is no Ohio River Bridge crossing at I-264’s eastern terminus. I-264 does not exist on the Indiana side of the Ohio River. The “outer beltway” freeway in the LMA is designated variously as I-265, KY 841 and Indiana S.R. 265. On the Kentucky side, I-265/KY 841 (the Gene Snyder Freeway) terminates at its western end approximately five miles south of the western terminus of I-264, at U.S. 31W/60 (the Dixie Highway) in southwestern Jefferson County. The northeastern terminus of I-265 in Kentucky is located at I-71 in eastern Jefferson County. At that point, the Gene Snyder Freeway becomes KY 841, continuing as a controlled-access, undivided, two-lane facility to its terminus at U.S. 42. In Indiana, I-265 runs from I-64 in Floyd County on the west, to I-65 in Clark County on the east. The freeway, known as the Lee Hamilton Highway, continues east of I-65 as S.R. 265 to its terminus at S.R. 62 near Charlestown, in southeastern Clark County. S.R. 265 is a four-lane, divided, controlled-access facility from I-265 to its terminus. The Kentucky and Indiana segments of I-265 do not connect across the Ohio River.

A variety of land uses can be found in the vicinity of the existing circumferential freeway system. Much of the area adjacent to I-264 is characterized by relatively dense commercial and residential land uses, with relatively little available vacant land. In most areas, development has extended to the right-of-way limits of the freeway, and expansion of the existing facilities would result in numerous displacements of existing land uses. Most of I-264 is constructed at grade or on fill, with structures limited to road crossings and interchanges. The areas adjacent to I-265 tend to be less heavily developed, with substantial undeveloped tracts of land in proximity to the freeway. Nevertheless, rapid residential, commercial and light industrial growth has occurred in recent years in the vicinity of I-265, particularly in the eastern portion of Jefferson County, Kentucky. The eastern terminus of I-265/KY 841 in Kentucky is located in an area characterized primarily by residential uses and a large number of historic properties. The eastern terminus of I-265/S.R. 265 in Indiana is located in a less densely populated area, with a large industrial park (the Clark Maritime Center) as well as a growing number of residential uses. As with I-264, most of I-265 is constructed at grade or on fill, with structures primarily limited to road crossings and interchanges.

2.2 Purpose and Need for Action

The purpose of this proposed action is to improve cross-river mobility between Jefferson County, Kentucky and Clark County, Indiana. Several specific factors contribute to, and demonstrate the need for, an improvement in cross-river mobility for LMA residents and interstate travelers. These interrelated factors, which should be addressed in any proposed solution, relate to: efficient cross-river mobility for existing and planned growth in population and employment; traffic congestion on the existing cross-river transportation system; traffic safety problems that hinder cross-river mobility; the lack of adequate cross-river transportation system linkage and freeway rerouting opportunities in the Eastern portion of the metropolitan area; and the locally-adopted KIPDA RMP, which calls for two new bridges across the Ohio River, Downtown and in the Eastern portion of the LMA. These factors are summarized below and discussed in more detail in Sections 2.2.2 through 2.2.6 below. Alternatives that meet this purpose and these specific needs were evaluated in light of important community and environmental values, and the need to balance enhancements in mobility with conservation of the human and natural environments.

The need for improvements in cross-river mobility in the LMA has become increasingly apparent over the past three decades. During the 1990s, the Metropolitan Louisville Ohio River Bridge Study and the ORMIS helped to clarify the interrelationship of a number of factors that either manifest or contribute to the problem of inadequate cross-river mobility. Insufficient cross-river transportation facilities, including the lack of any river crossing east, or upstream, of the Kennedy Bridge, have combined with population and employment growth in certain portions of the LMA to force an increasing number of vehicle trips onto the limited existing river crossings, especially the downtown Kennedy Bridge (I-65). In addition to extra congestion and delays, many travelers, particularly in the eastern portion of the LMA, incur substantial additional travel time and distance as a result of the need to use a downtown river crossing. That additional travel time and distance results in significant costs to the users of the transportation system, including both commercial and passenger vehicle traffic.

The concentration of river crossings in the vicinity of downtown Louisville, and in particular the lack of alternate river crossings upstream from downtown, also makes the cross-river transportation system vulnerable to incidents, maintenance and other activities that may impair or foreclose travel on the existing bridges. This lack of cross-river freeway rerouting opportunities hinders the ability of transportation officials to manage construction or incidents on area freeways while maintaining the efficiency of the transportation system. The solution to this problem requires a regional focus because the drivers crossing the Kennedy Bridge have a variety of origins and destinations. Most travelers do not simply cross the Kennedy Bridge from one immediate side of the river downtown to the other, but want to travel to and from other parts of the LMA and beyond. In short, the existing and future transportation needs downtown and in the east are interdependent because of the problems in the system downtown and the lack of cross-river access east of the Kennedy Bridge.

Population and employment growth has occurred in portions of Jefferson and Clark Counties near the Ohio River in the past 10 to 15 years and is projected to continue through the year 2025. The Downtown area is expected to see continued employment growth over that period (although the population downtown is generally expected to continue to decline), and eastern Jefferson and southeastern Clark Counties are expected to see major growth in both population and employment by 2025. Locally-approved land use plans generally support these predictions. While continuing to recognize the Downtown area as the economic heart of the region, those plans also call for additional commercial, industrial, and residential development, with attendant population and employment growth, in eastern Jefferson and southeastern Clark Counties in the coming years. Public infrastructure is already in-place or planned throughout much of the area to support the planned growth. The KIPDA, serving as the official transportation planning forum for the local jurisdictions, has recognized these growth trends and land use plans and has identified a need to improve cross-river mobility for these high growth areas. Currently, the Eastern areas in particular lack convenient cross-river access, especially from southeastern Clark County, and the increasing number of cross-river trips originating and/or terminating in these high growth areas are dependent on the Downtown river crossings for the nearest cross-river access. Without improvements to cross-river access, these high growth areas will continue to experience transportation system and economic inefficiencies, and will see further congestion on the existing cross-river transportation system.

The existing freeway bridges across the Ohio River have become increasingly congested as population and employment have increased in the LMA. The Kennedy Bridge and adjacent Kennedy Interchange, in particular, have become heavily congested, impeding cross-river mobility. Travelers currently experience substantial peak hour delays in that area, and those delays are expected to increase four to five-fold by the year 2025. In addition to increases in I-65 through-traffic and in employment-related travel to and from the Downtown area, the lack of any river crossing in the Eastern portion of the LMA serves as a constriction, forcing additional cross-river traffic onto the nearest river crossing, the downtown Kennedy Bridge, and exacerbating traffic congestion. The current cross-river traffic also includes a large volume of freight traffic, much of which originates and/or terminates outside the LMA. That freight traffic both contributes to the congestion problem and suffers delays along with all other traffic on the existing congested facilities, resulting in increased costs for commerce passing through the area.

The tight roadway geometry and narrow shoulders in the Kennedy Bridge/Interchange complex also hinders cross-river mobility, which impedes traffic safety, reduces traffic flow and hinders emergency vehicle access. Current design features, such as numerous left exits, weaving sections, and inadequate shoulders, contribute to safety problems on the existing facilities. The adverse effects of congestion and incidents in the Downtown area are amplified by the existence of only one other interstate freeway river crossing in the LMA (the Sherman Minton Bridge). Access to the Sherman Minton Bridge is impeded/blocked when the I-64 through movement encounters “stop-and-go” conditions in the Kennedy Interchange. The I-64 through movement needs to be separated from the other Kennedy Interchange weave movements.

This lack of alternate river crossings further impedes emergency response actions and incident management options. Traffic projections indicate that with no improvements to the cross-river transportation system, congestion on the Kennedy Bridge will become extreme by the year 2025, resulting in more crashes and congestion and further obstructing cross-river mobility.

Kentucky and Indiana have made a substantial investment over several decades to construct the circumferential freeway system in the LMA, but the existing system lacks any cross-river linkage in the Eastern portion of the area. While the Sherman Minton Bridge provides a cross-river connection on the circumferential system (via I-264) to the west of downtown Louisville, no such Eastern connection exists, either at I-264 (the “inner beltway”) or I-265 (the “outer beltway”). This lack of cross-river linkage exists despite the fact that both I-264 and I-265/KY 841 terminate near the Ohio River in eastern Jefferson County, Kentucky, and I-265/S.R. 265 terminates near the Ohio River just across the river in Clark County, Indiana—leaving an approximately five mile gap in the existing eastern circumferential freeway. As a result, the nearest option for cross-river access between the eastern portions of Jefferson and Clark Counties is the already heavily used Kennedy Bridge in downtown Louisville. In addition to contributing to traffic congestion downtown, travelers incur additional travel time and distance when traveling between the Eastern portions of the LMA. The lack of a system linkage upstream of the Kennedy Bridge also hinders the ability of governmental authorities to respond to crashes, emergencies and the ability to efficiently perform routine maintenance on the existing freeways and bridges.

The local governmental jurisdictions in the LMA, working through their federally sanctioned Metropolitan Planning Organization, KIPDA, have recognized the factors contributing to the need for improved cross-river mobility between Jefferson and Clark Counties and have recommended the construction of two new bridges across the Ohio River. This includes one downtown parallel to the existing Kennedy Bridge, and another in the east, linking the existing KY 841 and S.R. 265—as well as the reconstruction of the Kennedy Interchange. This “two-bridge” recommendation is included in the locally adopted KIPDA RMP. As discussed in Chapter 1, this recommendation is based on several studies; culminating in the 1995-1996 ORMIS process that examined cross-river mobility needs in the LMA, and has been described as “a total package of improvements to address cross-river mobility deficiencies over the long term.”

2.2.1 Regional Context

The identification of specific transportation needs within the LMA and the assessment of potential solutions to those needs requires an understanding of the overall population and employment growth patterns in the area. (See Figure 1.1-1, in Chapter 1, for a depiction of the LMA.) This “regional context” helps to better define and quantify the specific needs for improvements in cross-river mobility that have been identified between Clark County, Indiana and Jefferson County, Kentucky. It also provides the framework for evaluating alternative solutions to address those needs.

Socio-economic (population and employment) forecasts for the LMA are prepared under the auspices of KIPDA, the area’s designated Metropolitan Planning Organization. Those socio-economic forecasts are then fed into KIPDA’s travel demand computer model to estimate current and future travel demand within the area. Those regional travel demand conditions help to predict future travel conditions and the needs of those systems, and to ultimately evaluate potential solutions to the identified transportation needs. For purposes of defining the purpose and need for action in this case, travel demand conditions were forecast for the year 2025 based on the assumption that all of the projects included within KIPDA’s current RMP will be implemented, with the exception of the two new Ohio River bridges and the rebuild of the Kennedy Interchange recommended in ORMIS. Those conditions reflect the No-Action Alternative, which serves as the baseline for determining the need, if any, for action. In determining those No-Action conditions, an alternative distribution of population and employment was developed that did not assume the construction of new Ohio River bridges or the reconstruction of the Kennedy Interchange. This process is described in greater detail in Chapter 5, Section 5.1, and in Tables 5.1-1 through 5.1-3. These tables present five different future applications for the five alternatives considered. The Socio-Economic Report provides detailed discussion of the methodology used to develop the five different distributions of population and employment for the different alternatives considered (No-Action, one bridge in the Far East, one bridge in the Near East, one bridge Downtown and two bridges; including a Downtown bridge and an Eastern bridge).

On an LMA-wide basis, population is predicted to increase by 31 percent between 1990 and 2025, while employment is predicted to increase by 53 percent in the same period.¹ At the same time, the total number of daily trips in the LMA is expected to increase by 41 percent. (See Table 2.2-1) The number of vehicle miles of travel (VMT) is expected to increase by 57 percent, and the number of vehicle hours of travel is expected to increase by 74 percent. These summary figures demonstrate that travel in the LMA will increase nearly as fast or faster than population and employment in the same period.

¹ The population and employment distributions used to forecast the No-Action Alternative travel conditions are consistent with the No-Action Alternative transportation network, that is, no new bridges over the Ohio River and no modifications to the Kennedy Interchange.

TABLE 2.2-1
WEEKDAY TRAVEL SUMMARIES

	1990	2025 No-Action Alternative	Percent Change
Daily Trips	2,061,000	2,899,000	41%
Vehicle Miles of Travel	20,179,000	31,731,000	57%
Vehicle Hours of Travel	530,000	923,000	74%
Vehicle Hours of Delay *	64,000	208,000	225%

* Additional hours of travel time caused by traffic congestion.

At the same time, cross-river travel demand also is expected to double. Between 1990 and 2000, total daily traffic crossing the Ohio River on the three existing roadway bridges grew from 166,400 vehicles to 244,000 vehicles, an annual compounding rate of increase of 3.9 percent. (See Table 2.2-2.) By 2025, a total of 342,000 vehicles per day are expected to cross the Ohio River on the three existing bridges, representing a 40 percent increase over 2000 levels (an increase of approximately 1.4 percent per year). By 2025, the Kennedy Bridge, which already is required to handle more traffic than its design capacity (106 percent of capacity in 2000, which means that cross-river demand is 6% above the capacity of existing cross-river facility capacity at LOS D, see definition of performance measure in Section 2.3), will be expected to handle 142 percent of its design capacity, resulting in extreme traffic congestion. Similarly, while the Clark Memorial and Sherman Minton Bridges have not yet reached their capacity, they will both be over capacity by 2025: 112 percent of capacity for the Clark Memorial Bridge, and 120 percent of capacity for the Sherman Minton Bridge. Thus, the existing Ohio River bridges alone will be of limited effectiveness in addressing any needs for improvement in cross-river mobility.

TABLE 2.2-2
DAILY OHIO RIVER VEHICLE CROSSINGS

Bridge	1990	2000	2025 No-Action Alternative
Sherman Minton Bridge (I-64)			
Weekday Traffic Volume	51,400	85,000	129,700
Demand as Percent of Capacity	48	79	120
Clark Memorial Bridge (U.S. 31)			
Weekday Traffic Volume	19,000	26,000	33,700
Demand as Percent of Capacity	63	87	112
Kennedy Memorial Bridge (I-65) ¹			
Weekday Traffic Volume	96,000	133,000	178,600
Demand as Percent of Capacity	89	106	142
Total Daily Ohio River Crossings			
Weekday Traffic Volume	166,400	244,000	342,000
Demand as Percent of Capacity	68	92	130

1 - Northbound lane added to the Kennedy Bridge in 1996.

The 2025 cross-river travel demand forecast also shows a large increase in cross-river trips with an eastern orientation. In 1990, approximately 20,400 daily cross-river trips were estimated to have occurred between eastern portions of the LMA upstream of the Kennedy Bridge—including the areas of Clark County east of I-65, areas of Jefferson County north of Taylorsville Road and Oldham County, as well as trips to/from the north on I-65 in Indiana and to/from the east on I-64 and I-71 in Kentucky. Daily cross-river trips with those origins and destinations are forecast to increase to 45,600 by 2025, a 124 percent increase. This latter increase compares with an estimated 106 percent increase in the overall number of cross-river trips between 1990 and 2025. In addition, under the No-Action Alternative, the total vehicle miles of travel associated with those eastern oriented cross-river trips is forecast to increase by 150 percent between 1990 and 2025, and the total vehicle hours of travel (VHT) are forecast to increase by 145 percent in the same period. (See Figure 2.2-1.) Under the No-Action Alternative, all of these cross-river trips must utilize the Kennedy Bridge or one of the other existing downstream bridges.

KIPDA also is responsible for determining whether the implementation of the projects in the LMA's RMP, as well as the short-range Transportation Improvement Program (TIP), will adversely affect the ability of the LMA to attain, or to continue to make progress toward, attainment of compliance with the National Ambient Air Quality Standards (NAAQS) established pursuant to the Clean Air Act. This process, known as an air quality "conformity" analysis, is performed pursuant to Section 176 of the Clean Air Act, 42 U.S.C. § 7506, and the



DAILY VEHICLE TRAVEL SUMMARY BETWEEN
EASTERN CLARK COUNTY AND EASTERN JEFFERSON/OLDHAM COUNTY

DAILY TRAVEL	YEAR		% Change
	1990	2025	
Vehicle Trips	20,400	45,600	124
Vehicle Miles of Travel	522,000	1,303,800	150
Vehicle Hours of Travel	11,200	27,400	145

Source: KIPDA Model Projection



implementing regulations promulgated by USEPA, at 40 C.F.R. Part 93. The construction of two new Ohio River bridges—one downtown and one between eastern Jefferson and Clark Counties—and the reconstruction of the Kennedy Interchange are included in KIPDA's current RMP. KIPDA must amend the 2025 RMP to reflect the FEIS Preferred Alternative (6-lane I-265, rather than 4 lanes recommended by ORMIS) and demonstrate fiscal constraint and conformity before FHWA approval of the ROD (per 40 CFR 93.107).

Further, KIPDA has determined that full implementation of the long-range transportation plan, including the foregoing project elements, will support the LMA's ability to achieve attainment of the NAAQS (see Appendix C.10).

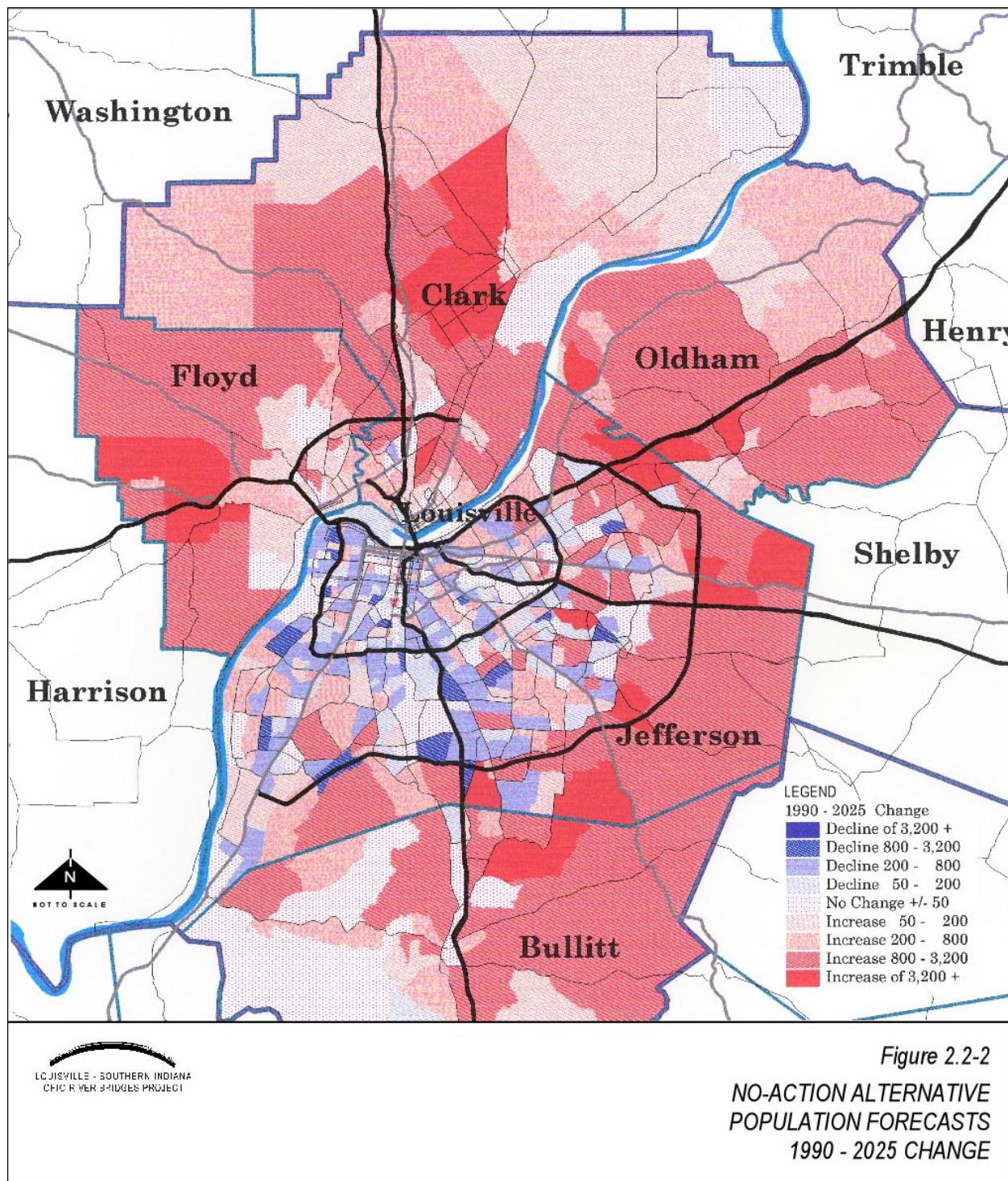
2.2.2 Population and Employment Growth and Land Use Plans

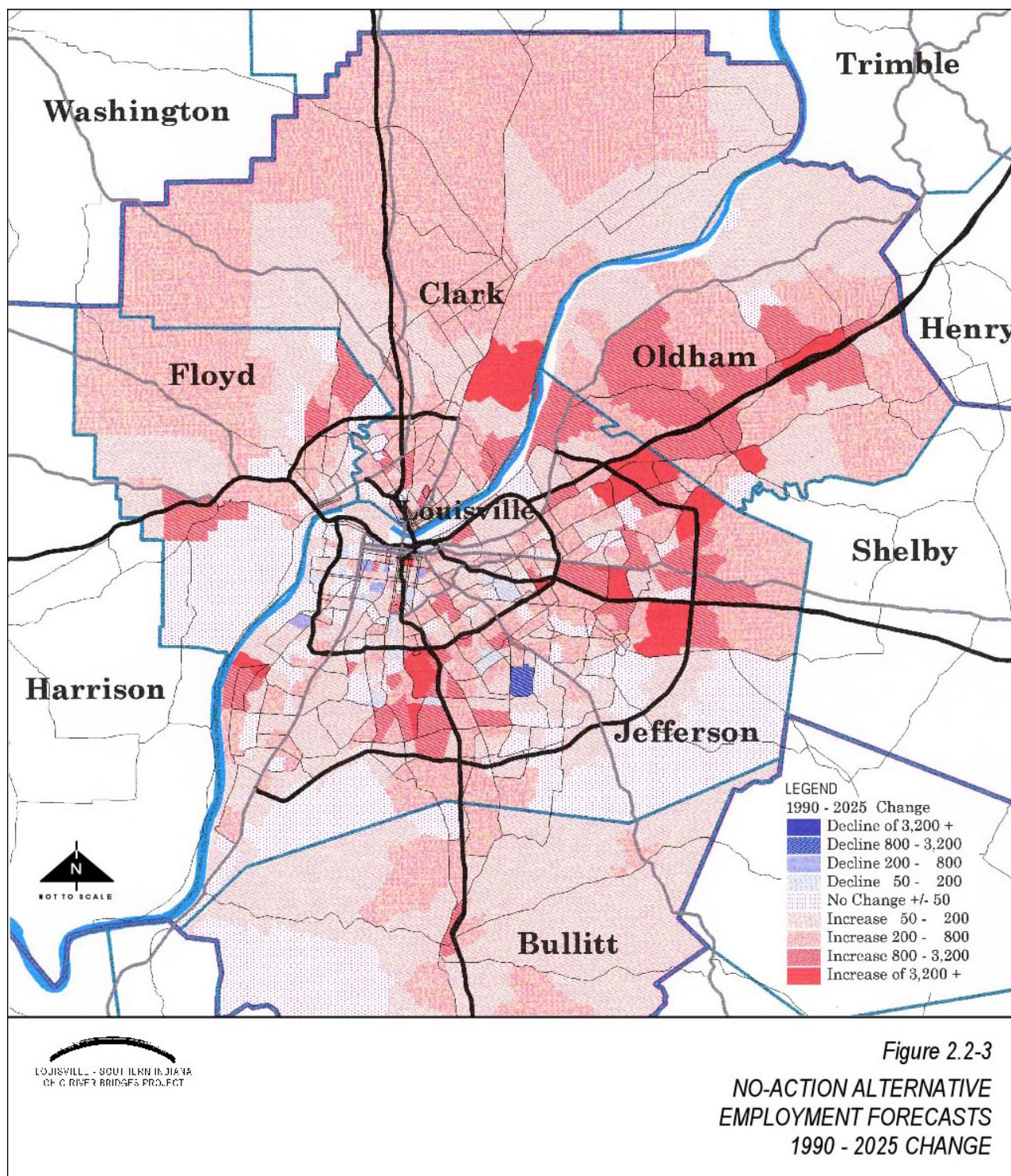
As described above, population in the LMA is predicted to grow by 31 percent between 1990 and 2025 and employment is predicted to increase by 53 percent in the same period. The forecast rates of population and employment growth vary throughout the LMA, with some areas showing large increases, other areas showing more moderate growth and some areas showing decreases. (See Figures 2.2-2 and 2.2-3.) Healthy employment growth is anticipated in the Downtown Louisville and Jeffersonville areas, although the predictions suggest some loss of population in those areas. Much of eastern Jefferson County, Kentucky, and southeastern Clark County, Indiana, is predicted to see moderate to high population and employment growth rates between 1990 and 2025. (These growth rates are based on the No-Action Alternative set forth previously.) Those growth predictions are generally consistent with locally-approved land use plans and proposed infrastructure improvements in those areas, except that land use planners in both Jefferson and Clark Counties have indicated a desire to slow or reverse the rate of population decline in the Downtown areas. Those predictions also are generally confirmed by limited population data that has recently become available from the 2000 census.

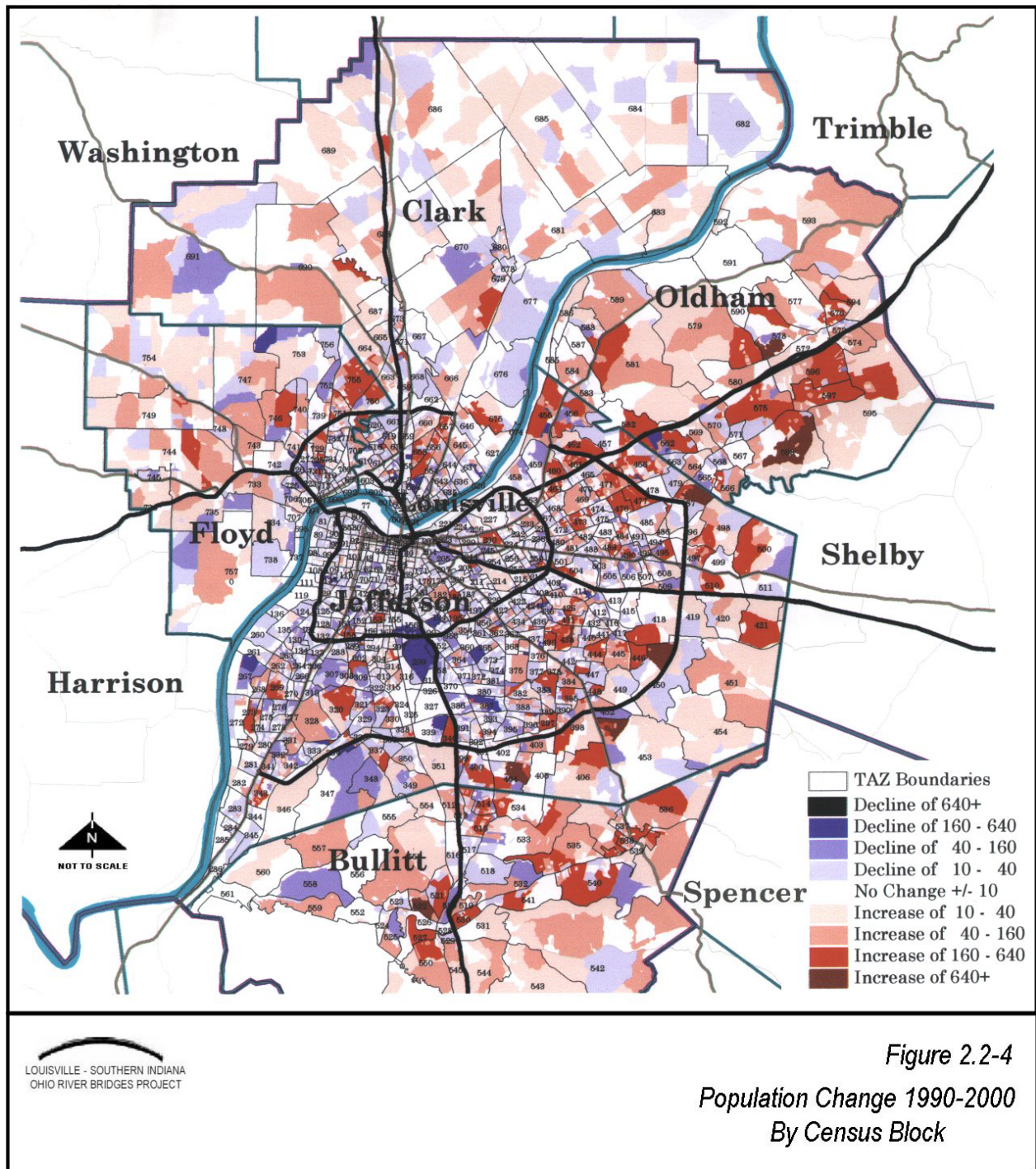
As shown on Figure 2.2-4, the areas of eastern Jefferson and southeastern Clark Counties that are predicted to see moderate to high population growth through 2025 have generally shown moderate to high population growth between 1990 and 2000. Similarly, those areas expected to experience less rapid growth, or actual declines, in population also have tended to confirm those predictions between 1990 and 2000.²

The Kennedy and Clark Memorial Bridges currently provide cross-river transportation access in the Downtown area, which serve as the economic and employment center of the LMA. However, as described in Section 2.2.3 below, the existing roadway bridges in the Downtown area are already congested and are predicted to become more heavily congested by 2025. Meanwhile, the high growth areas of eastern Jefferson County and southeastern Clark County are juxtaposed across the Ohio River, but lack convenient cross-river transportation access, thereby hindering cross-river mobility. The closest cross-river transportation access for these eastern areas is the Kennedy Bridge, located in the Downtown area. Consequently, many cross-river

² Comparable employment data is not available from the 2000 census for use in confirming the KIPDA employment forecasts. Employment data from the census is gathered based on the household residence of employees, rather than their place of employment. The employment data contained in this EIS is based on place of employment. Consequently, the limited employment information currently available from the 2000 census is not useful in confirming the employment information contained herein.







trips within the LMA with eastern orientations incur additional VMT and VHT, and contribute to congestion on the downtown crossings.

Moreover, if travel on the Kennedy Bridge is impaired or foreclosed by an incident on the bridge or its approaches, or by necessary maintenance activities, the only other river crossing options are the Clark Memorial and the Sherman Minton Bridges, both of which are located further downstream and are already heavily utilized themselves. Local transportation planners have identified a need to improve cross-river mobility for these high growth areas (Downtown and East End), and thereby improve the efficiency of the transportation system by reducing trip lengths and duration.

Projected Growth

The No-Action Alternative population and employment forecasts for the 1990-2025 period indicate that employment growth will continue to occur in the downtown Louisville area, with moderate employment growth also occurring in downtown Jeffersonville/Clarksville. Particularly high growth in employment is predicted in the area surrounding the medical complex in downtown Louisville. These high growth areas are shaded in pink and red on Figure 2.2-3. However, Figure 2.2-2 indicates that population is predicted to continue to decline in much of the Downtown area (as shown by blue-shaded areas) through the year 2025. This trend is generally confirmed for the period of 1990-2000, as shown by Figure 2.2-4, which is based upon recently available population data from the 2000 census.

The socio-economic forecasts for 1990-2025 also show that rapid population and employment growth is occurring, and will continue to occur, in the eastern portion of the LMA. In Indiana, such growth is apparent in the area of southeastern Clark County between I-65 and the Ohio River (extending north to about Charlestown, Indiana). As indicated by the dark red shaded areas on Figure 2.2-3, large employment gains are predicted in the vicinity of the Clark Maritime Center and the former Indiana Army Ammunition Plant (INAAP), part of which has been transferred to a local reuse authority for commercial and industrial redevelopment. Major growth in population is also anticipated in this area of southeastern Clark County, including the areas near S.R. 265, as well as the area just to the west of S.R. 62 across from the INAAP. Areas of dark red shading on Figure 2.2-2 indicate high rates of population growth in southeastern Clark County, between I-65 and the Ohio River. Similarly, Figure 2.2-4 shows that many of those areas already have shown significant growth between 1990 and 2000, especially as compared to other areas of the region, based on 2000 census data.

The 1990-2025 population and employment forecasts indicate high growth in eastern Jefferson County (as well as much of adjacent Oldham County), across the Ohio River from the high growth areas of southeastern Clark County. Much of the predicted population growth in eastern Jefferson County over that period is expected to occur in a corridor along the existing I-265/KY 841 (Gene Snyder Freeway), with several areas of high growth between I-64 and the Ohio River, as shown by the dark red areas on Figure 2.2-2. These general population trends have been borne out in fact in the past decade, as shown on Figure 2.2-4. Employment in this area also is expected to increase between 1990 and 2025, with several areas of high growth again concentrated along the Snyder Freeway from the I-64 interchange to the Ohio River, as shown in

dark red on Figure 2.2-3. While areas of moderate to high population and employment growth are distributed throughout much of the LMA, a large portion of that growth is predicted to occur in the areas of eastern Jefferson, Oldham and southeastern Clark Counties located opposite each other across the Ohio River. Those areas of growth also tend to be concentrated along or near the existing S.R. 265 in Indiana and I-265/KY 841 in Kentucky. However, as noted previously, cross-river mobility between these two high growth areas is hindered by the lack of any cross-river transportation access closer than the downtown Kennedy Bridge.

Land Use Plans and Infrastructure Improvements

Locally approved land use plans generally support the population and employment growth predictions discussed above. Those plans indicate that the local jurisdictions anticipate and desire growth in the Downtown area and in southeastern Clark and eastern Jefferson Counties in the coming decades.

Clark County, Indiana

The Clark County Comprehensive Plan, adopted by the Clark County Plan Commission in 1991, adopts a policy of “promoting orderly growth and development while encouraging a better quality of life for all citizens of Clark County.” (Clark County Comprehensive Plan (CCCP), Land Use Development Policy.) That policy is intended to promote land use practices designed to ensure “adequate and appropriate infrastructure,” provide opportunities for economic growth and development, and provide a wide range of affordable housing, while minimizing the loss of prime agricultural lands and protecting the natural environment. The areas of downtown Jeffersonville and Clarksville, near the Kennedy Bridge, is already a relatively densely developed urban environment, with limited space for new development. The plan indicates that the majority of the land best suited for development in Clark County is located in the eastern portion of the county near existing transportation corridors. (See CCCP graphics: “Natural Systems” and “Land Suitability.”) In contrast, the western portion of the county is generally unsuitable for large-scale development because of physical conditions, such as floodplains, severe slopes and soils that are unsuitable to on-site sewage disposal. The CCCP indicates that the two largest areas of planned, concentrated industrial land use in the county are located on either side of S.R. 62, just north of existing S.R. 265, in the vicinity of the INAAP. (See CCCP graphic: “Land Use Plan.”) In addition, the land use plan indicates that two “activity centers” are located in the same vicinity. The Clark Maritime Center and an adjacent area of the town of Utica, zoned for industrial use, also are located in southeastern Clark County, near the intersection of S.R. 265 and S.R. 62. Future development is planned at the INAAP, located to the northeast of the Clark Maritime Center, which includes 6,590 acres that are to be transferred to a local reuse authority for commercial and industrial redevelopment under the Armament Retooling and Manufacturing Support Act of 1992. The INAAP site also is an Urban Enterprise Zone and includes a 2,000-acre Foreign Trade Zone.

In addition, Goal 4 of the CCCP states that the County should “assure that infrastructure facilities and amenities are sufficient to support Clark County’s long-term growth and development.” To that end, Objective 4A of the plan states that the County will “improve, replace, and update

existing infrastructure, including roadways, bridges, sewerage systems and water systems, as needed and as funding allows.” In addition, Objective 4B specifically states that the County will “continue to support construction of a new bridge across the Ohio River from the I-265 extension to eastern Jefferson County, Kentucky.” Further, Objective 4C calls for a “balanced transportation system that adequately serves all areas of the County while minimizing air pollution.” Objective 9B also calls for planning transportation routes so that they carry traffic conveniently and efficiently from residential uses to commercial and industrial development.

Infrastructure improvements are also planned in southeastern Clark County by the Clark County Regional Sewer District, which was established by the Clark County Board of Commissioners. The District has contracted for the provision of water and sewer service to the INAAP property, as well as wholesale water sales and sewage treatment services to neighboring communities, in part by utilizing existing abundant water resources and wastewater treatment capacity at the INAAP. The city of Jeffersonville also is extending sewer service to the northeast, into a portion of the area west of the INAAP and S.R. 62.

The city of Jeffersonville Comprehensive Plan states that “downtown Jeffersonville is the focal point of the community and strong efforts should be made to preserve and enhance it as a special center of activity” (Jeff. Comp. Plan, III-4). At the same time, the plan notes, ““close-in” interstate accessible land [in Clark County] is becoming an increasingly scarce resource” (Jeff. Comp. Plan, III-1). The plan further observes that most vacant and developable land remaining within the Jeffersonville planning area lies to the north and east of the current city limits, on the large amount of vacant land between the S.R. 265/S.R. 62 interchange and the town of Utica. The plan predicts “major future growth” in these areas “because of convenient access to interchanges on I-65 and I-265” (Jeff. Comp. Plan, III-2). The plan also encourages siting industrial uses near major transportation routes, man-made barriers and natural barriers to provide appropriate buffers for other uses.

A large portion of the city’s current industrial use land is located in the vicinity of the Clark Maritime Center, a 1,200-acre complex adjacent to the Ohio River. Employment at the center in 2000 was over 2,100 with 4.1 million tons of cargo handled. The distribution of cargo shipments was approximately evenly split between truck, rail and barge modes. Activities at the Clark Maritime Center complex are projected to grow. Recent expansion of dock facilities has increased waterborne cargo handling capacity by 1.2 million tons annually. This major intermodal port facility currently lacks good cross-river access, hindering its attractiveness and ability to serve interstate commerce.

The city has identified prime land for development in the vicinity of the S.R. 265/S.R. 62 interchange. The plan states that the city expects the “eastern area will become a prime growth corridor with the opening of I-265 on into Kentucky.” The Jeffersonville plan also states that the transportation system should “serve and support existing and future land use and development and minimize conflicts between the transportation systems and the social and natural environments in which they function” (Jeff. Comp. Plan, VIII-7).

The zoning ordinances for the incorporated jurisdictions within Clark County generally prohibit any new development without connection to a public sewage system (as opposed to on-site sewage disposal systems). In addition, the city of Jeffersonville also discourages any new package wastewater treatment plants within its corporate limits. As a result, development within corporate areas likely will be limited by sewage capacity, which, in some cases, may be extremely limited. Therefore, new growth will be focused on areas capable of providing access to public sewage facilities or unincorporated areas capable of supporting on-site sewage systems (subject to site limitations). Based on Clark County's physical limitations—including soil types—this restriction likely will force new development toward the county's eastern portion. This area coincides with the previously described plans of both the Clark County Sewer and Water District and the city of Jeffersonville to extend sewage treatment facilities in southeastern Clark County.

Jefferson County, Kentucky

Jefferson County has been engaged in a comprehensive planning process, known as Cornerstone 2020, for the past decade. That planning process has produced the "Cornerstone 2020 Comprehensive Plan," adopted by the Louisville and Jefferson County Planning Commission on June 15, 2000. Copies of that plan disseminated by the Planning Commission include several "core graphics" that depict existing and planned land use conditions in Jefferson County and various specialized land use characteristics. While not officially adopted elements of the comprehensive plan, the core graphics are useful aids provided by the Planning Commission to interpret the strategies, goals and objectives of Cornerstone 2020. Core Graphic 1 depicts "Community Form Areas," which are distinct planning districts that "recognize and encourage distinctive patterns or forms of development and which implement planning policies governing new or infill development." These form districts are to be used "as a guide for determining the most desirable, appropriate, economic and feasible pattern of public or private development." (The characteristics of the form districts described generally in the goals and objectives of Cornerstone 2020 are described more particularly in the Land Development Code for Jefferson County, which, on August 29, 2002, the Jefferson County Planning Commission recommended for adoption by the legislative bodies of the governmental jurisdictions with zoning authority in Jefferson County. Once adopted by those jurisdictions, the provisions of the revised Land Development Code will govern land use regulation in Jefferson County.)

Cornerstone 2020 describes a "Downtown" district, which Core Graphic 1 depicts as primarily encompassing the central business district in downtown Louisville. Cornerstone 2020 states a goal of "support[ing] development and redevelopment in the downtown district, establishing it as the heart of the city and the economic center of the region." The plan also calls for the development of downtown as a "unique and active destination with a variety of land uses," and encourages land uses that "recognize downtown as the regional center for employment, office space, transportation, medical care, government, culture and entertainment." This view of the Downtown area as the economic center of the region is consistent with the employment growth forecasts for the Downtown area described previously. Cornerstone 2020 also encourages "a variety of housing and retail development in downtown districts," although population trends and forecasts suggest a continued decline in population and housing downtown.

Cornerstone 2020 also supports the population and employment growth projections described previously for eastern Jefferson County. The I-265/KY 841 corridor in eastern Jefferson County already includes several major employment and commercial centers, including the Ford Kentucky Truck Plant (with nearly 6,000 employees), the Bluegrass Industrial Park (with approximately 33,000 employees) and the Springhurst Town Center. Cornerstone 2020 envisions the continuation of those land uses, as well as expansions of employment opportunities in the area. Core Graphic 1 reveals that a large portion of the land along I-265/KY 841 in eastern Jefferson County—particularly in the corridor from I-64 to I-71—has been placed in either a “suburban workplace” or a “regional center” form district classification. The suburban workplace classification calls for “large scale industrial and employment centers,” while the regional center classification calls for a “regional-serving, mixed-use, activity center with a strong identity.” Regional centers are to “have a high level of transit, automobile, pedestrian and bicycle access” and “be located near an expressway or arterial interchange to provide access to people from a wide area.” Similarly, suburban workplace districts “should accommodate a high level of access for all appropriate modes of transportation. To accommodate the shipment of materials by truck, rail and water, workplace districts should be linked to regional transportation networks.”

Cornerstone 2020 also contains a “Mobility Strategy.” Goal A3 of that Strategy calls for “enhancing the competitive position of Jefferson County and providing for the movement of goods by taking full advantage of opportunities to support and expand existing transportation systems (highway, rail, air and water) and their intermodal connections.” Goal A4 encourages the “maintenance of a roadway network that benefits the residents and business community of Jefferson County and provides the highest appropriate level of transportation service based on the recognition that the automobile is a primary mode of transportation in the county.” Likewise, Goal B1 supports the “development, adoption and implementation of an effective congestion management strategy to focus resources on improving the transportation system and reducing roadway congestion and the rate of growth of vehicle miles traveled,” while Goal C1 calls for the mobility system to be developed in a way that will “enable the community to achieve and maintain a high level of environmental quality.” Goal E1 of the Strategy also calls for directing and encouraging land use patterns that build upon the Community Form goals, encourage compatible land uses, and “establish connections between land uses and the mobility system.” To that end, Core Graphic 10 of Cornerstone 2020, depicts current roadway classifications and future roadway corridors. Core Graphic 10 indicates two “future roadway corridors” across the Ohio River in Jefferson County. One corridor encompasses the area north of Downtown Louisville in the general vicinity of the existing Kennedy and Clark Memorial Bridges. The second corridor extends along KY 841 in eastern Jefferson County from I-71 across the Ohio River to Clark County, Indiana. (These corridors generally correspond to the corridors identified in the ORMIS recommended solution.)

The KIPDA population and employment growth forecasts set forth previously are also consistent with population and employment forecasts for the year 2020 prepared as part of the Cornerstone 2020 process. (In fact, the approved land use plans of the local jurisdictions, including Jefferson County’s Cornerstone 2020, form the basis for KIPDA’s forecasts.) The data and forecasts prepared during the Cornerstone 2020 process included estimates of population and employment

growth between 1990 and 1995, and projected additional growth through the year 2020. That data was provided for 13 different geographic, or “market,” areas identified within Jefferson County. The data indicated that the eastern portions of Jefferson County grew more rapidly than much of the rest of the county between 1990 and 1995 and are forecast to continue to grow more rapidly through the year 2020. In contrast, population in the Downtown area and in areas to the west and southwest are generally expected to continue to decline (with the exception of an area in far southern Jefferson County). Again, these observations are generally consistent with the population trends seen in initial population data made available from the 2000 census, as shown graphically on Figure 2.2-4. Employment grew more solidly throughout the county between 1990 and 1995, with the strongest growth rates in eastern and southwestern Jefferson County. Those growth rates were projected to continue through 2020, with only western Louisville showing a decrease. Notably, while the highest percentage rates of growth were located elsewhere, the highest absolute numbers of employment growth were projected to occur in the Downtown area and its vicinity, showing the continuing importance of downtown Louisville as the economic center of the region.

2.2.3 Traffic Congestion

As cross-river travel demand has continued to increase along with population and employment growth, traffic congestion problems have become particularly acute in the Kennedy Bridge and Kennedy Interchange area and on its interstate freeway approaches in Downtown Louisville, Kentucky and Jeffersonville and Clarksville, Indiana. Peak period (i.e. “rush hour”) congestion occurs nearly every weekday, with traffic congestion on the Kennedy Bridge spilling over to the Kennedy Interchange and vice versa. (The peak period is defined as 7:30 A.M. to 8:30 A.M., and 4:45 P.M. to 5:45 P.M.) Traffic congestion on those freeway facilities also extends to their adjacent interstate approaches on I-64 and I-71 in Kentucky and on I-65 in both Kentucky and Indiana. In addition to the transportation inefficiencies it causes, congestion also can lead to additional problems, such as increased crash frequencies and increased emissions of air pollutants from vehicles.

The lack of viable alternate river crossing options for much of the Kennedy Bridge traffic aggravates traffic congestion problems, which in turn hinders cross-river mobility for travelers throughout much of the LMA who must use these congested facilities. By 2025, the Sherman Minton Bridge is projected to be severely congested, with demand at 120 percent of capacity. Even the non-interstate Clark Memorial Bridge is projected to be slightly above capacity by 2025. Thus, those crossings will provide little, if any, relief to the extreme congestion in the vicinity of the Kennedy Bridge. Moreover, no cross-river connections are provided in the LMA upstream of the Kennedy Bridge. As noted previously, cross-river trips between those areas upstream of the Kennedy Bridge are projected to grow at a substantially greater rate than overall cross-river trips in the LMA. Thus, all travel between Jefferson County, Kentucky and Clark County, Indiana must utilize one of the congested downtown crossings, which will continue to become more congested.

Freight traffic constitutes a significant portion of the traffic using the existing cross-river transportation system and plays an important role in the interstate shipment of goods in an economy that increasingly relies on “just-in-time” inventory deliveries and the free flow of

goods and services throughout the country. I-65, in particular, is a major north-south commercial route, with a significant percentage of freight traffic. Congestion and delays at the current river crossing bottleneck interfere with the free flow of commerce through the area. Freight traffic suffers from the traffic congestion that occurs in the Downtown area, resulting in delays and additional costs for commerce passing throughout the LMA. In addition, freight movement across the Ohio River contributes to existing and projected traffic congestion on the Ohio River crossings in the LMA.

The importance of freight in cross-river travel is shown in the proportion of trucks among vehicles crossing the Ohio River. Twelve-hour vehicle counts conducted in 1992 indicated that trucks comprised 12 to 13 percent of vehicles crossing the Ohio River on the Kennedy Bridge (I-65). During the 12-hour period from 7:00 A.M. to 7:00 P.M., more than 9,000 trucks crossed the Kennedy Bridge. During periods with high truck movements, trucks comprise as much as 25 percent of total vehicles. (See Figure 2.2-5.) Traffic counts conducted in the 1990s indicated that the truck proportion of I-65 usage at the Ohio River remained relatively constant, comprising 12 to 14 percent of the total traffic. Counts of southbound traffic based on a review of TRIMARC videotapes made at the south end of the Kennedy Bridge in December 1999 indicated that commercial vehicles comprised approximately 11 percent of the 7:00 A.M. to 8:00 A.M. peak hour traffic flow. This is generally consistent with the information presented above and in Figure 2.2-4. (Similarly, traffic counts made on I-65 in Kentucky about three miles south of the Kennedy Bridge indicated that commercial vehicles comprised about 11 percent of the traffic stream in 2002, and about 12 percent in 2001.)

Freight traffic passing through the LMA (i.e. with no local origin or destination) appears to be a large portion of total cross-river truck trips and thus both contributes to congestion and suffers from congestion that occurs on the existing bridges, particularly during the peak period. Data collected by KIPDA in a 1994 External Origin-Destination Study show that approximately 12 percent of the truck traffic exiting the LMA on I-65 northbound originates from the east on I-64 westbound, and approximately 21 percent of truck traffic exiting the LMA on I-64 eastbound originates from the north on I-65 southbound. (See Figures 2.2-6.) Based on the distribution of data from that origin-destination study, at least 1,500 trucks per day are traveling through the LMA from I-64 westbound to I-65 northbound and from I-65 southbound to I-64 eastbound. All of those trips currently must utilize the heavily congested Kennedy Bridge to cross the Ohio River because of the lack of any alternate Eastern river crossing route.

In addition to traffic congestion caused simply by high traffic volumes, the complex nature of the Kennedy Interchange causes additional problems. (See Figure 2.2-7.) For example, traffic backups on a single ramp can spill over and cause congestion throughout the interchange and on its interstate approaches.

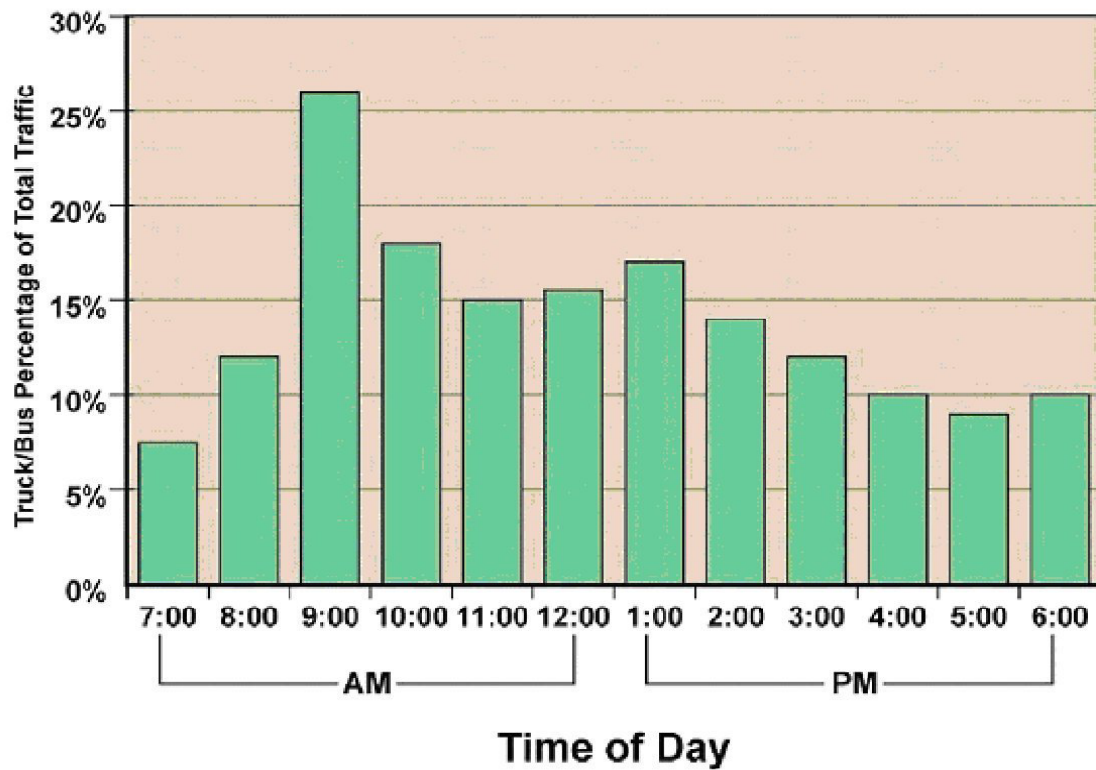
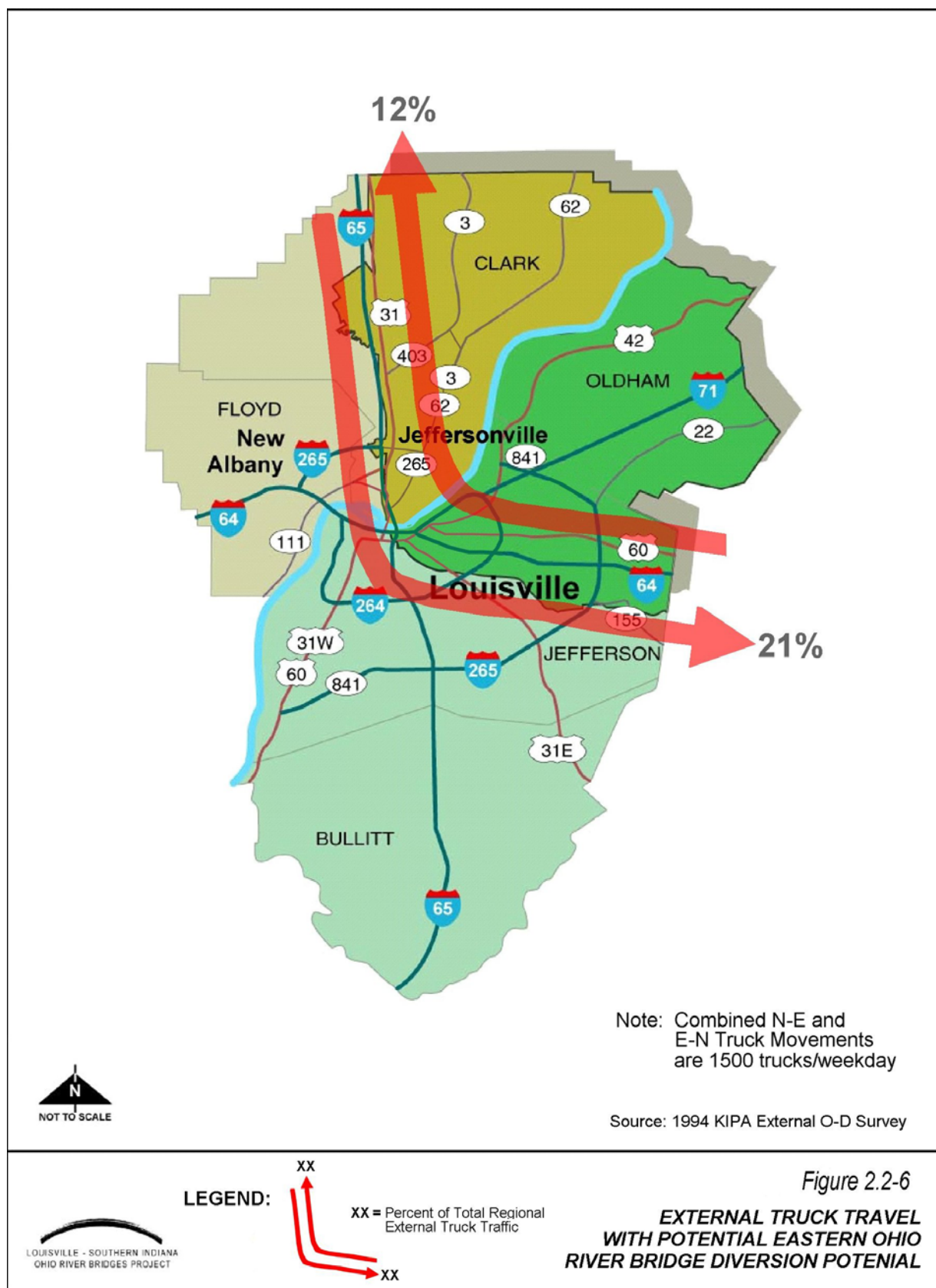


Figure 2.2-5
Truck/Bus Traffic on I-65 Southbound



Consequently, a detailed analysis of the Kennedy Interchange and its interstate approaches was performed using the FHWA latest freeway operations computer simulation model, CORSIM. As shown in Table 2.2-3, the CORSIM analysis provided several measures that demonstrate that traffic congestion in the Kennedy Interchange and on its interstate approaches, including the Kennedy Bridge (I-65), will increase dramatically between 1999 and 2025. (These projections are based on the No-Action Alternative described above in Section 2.2.1.)

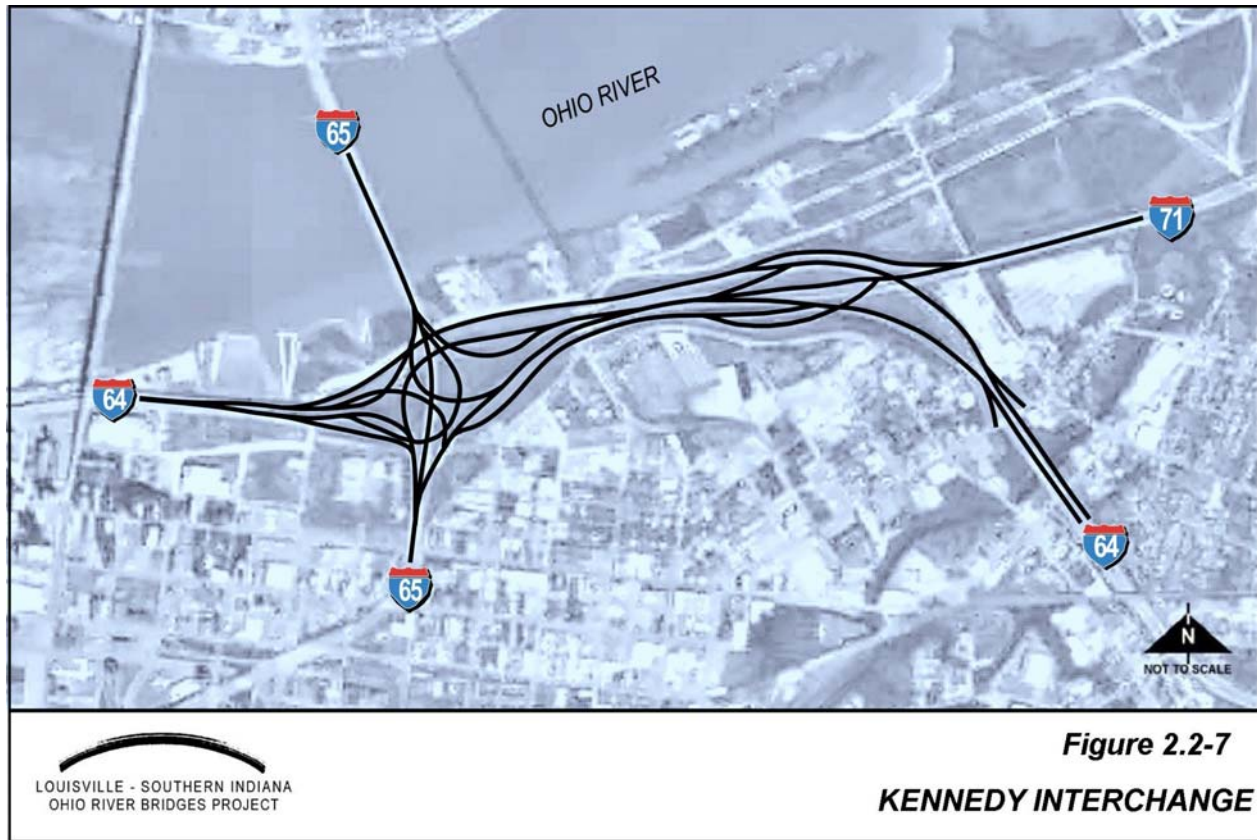


TABLE 2.2-3
KENNEDY INTERCHANGE AREA WEEKDAY OPERATIONS

Measure		1999	2025 No-Action
Average Peak-Hour Speed:	A.M. Peak Hour	37 mph	17 mph
	P.M. Peak Hour	43 mph	16 mph
Total Vehicle Hours of Delay:	A.M. Peak Hour	361	1,581
	P.M. Peak Hour	252	1,841
Throughput as Percent of Demand*:	A.M. Peak Hour	100%	84%
	P.M. Peak Hour	100%	91%

* Throughput is the amount of traffic passing through a roadway system. If throughput is less than 100 percent of demand, traffic backups and diversions result. The lower the throughput, as a percent of demand, the worse the congestion and diversion.

Another measure of traffic congestion is known as the “level of service,” or LOS. LOS identifies the degree of congestion on a particular roadway segment. LOS ranges from A to F, with LOS A indicating the least congestion and best traffic flow, and LOS F indicating the most congestion and worst traffic flow. Figure 2.2-8 depicts representative freeway traffic volumes for each LOS level. The design book, “A Policy on Geometric Design of Highways and Streets,” published by the American Association of State Highway and Transportation Officials (AASHTO), states: “For acceptable degrees of congestion, freeways and their auxiliary facilities, i.e., ramps, main line weaving sections and [collector-distributor] roads in urban and developing areas, should generally be designed for LOS C. In heavily developed sections of metropolitan areas, conditions may necessitate the use of LOS D.” Indiana’s highway design policies specify a minimum LOS C for a 20-year design. Currently, levels of service are fair to poor (generally LOS C through F) on most of the roadway segments in the Kennedy Interchange and on its interstate approaches. (See Figure 2.2-9.) LOS is especially poor on roadway segments where traffic flows cross (known as “weaving movements”). Without any improvements to cross-river mobility, the LOS is predicted to worsen by the year 2025. For example, most roadway segments on the existing facility that are currently operating at better than LOS F are expected to degrade by at least one LOS “grade level” by 2025. (See Figure 2.2-9.)

2.2.4 Traffic Safety

The Kennedy Interchange and Kennedy Bridge have a history of high crash rates. Within the Kennedy Interchange, the 1996-1998 traffic crash rate was 261 crashes per 100 million VMT. This is 172 percent higher than the statewide average rate of 96 per 100 million VMT for urban interstate highways in Kentucky. For Indiana, the 1996-1998 crash rate on I-65 just north of the Kennedy Bridge was 203 per 100 million VMT. This is 98 percent higher than the statewide average rate of 102.5 per 100 million VMT for urban interstate highways in Indiana.

The design geometry of the Kennedy Interchange does not meet current design standards and thus contributes to these high crash rates. The weaving movements from westbound I-64 and I-71 to I-65 (both directions), and from I-65 (both directions) to eastbound I-64 and I-71 are particularly problematic. I-64 through-movement to and from the Sherman Minton Bridge is blocked when the Kennedy Interchange weaves result in “stop and go” traffic.

The tight radii of ramps and lack of shoulders within the complex interchange also contribute to safety problems. When crashes occur or vehicles break down, it is difficult for emergency equipment to quickly reach the crash site and/or remove disabled vehicles because of the lack of full shoulders. Emergency vehicle access difficulties contribute to increased traffic congestion and will worsen as travel demand increases.

The design deficiencies of the Kennedy Interchange can be demonstrated in the context of entrance and exit ramps. Interchange designs typically include the use of entrance and exit ramps from the right side of the mainline roadway. Ramps to and from the left side are generally avoided due to a greater potential for crashes. In a series of reports prepared for the FHWA on the relationship between crashes and highway geometry, the crash rate per million vehicles was

provided for a variety of ramp types, both on and off the freeway. The crash rate for left hand entrance ramps is higher than any other on-ramp design, including a crash rate that is more than 2.3 times greater than the rate for the most commonly used diamond entrance ramps. The crash rate for left hand exit ramps is again higher than any other off-ramp design, with a crash rate that is more than 3.3 times greater than that of the most commonly used diamond exit ramp. Overall, left-hand exit ramps have a crash rate that is almost three times the average crash rate for all ramp types. Currently, the Kennedy Interchange has numerous left-hand entrance and exit ramps, contributing to the overall safety problems in the interchange. Elimination of left-hand ramps, separating the I-64 through-movement from weaves, as well as other substandard geometric features, will reduce crashes and improve safety in the Kennedy Interchange.³

The Kennedy Bridge currently does not meet interstate design criteria. Specifically, while the Kennedy Bridge deck is 82 feet wide, current interstate design criteria for a structure carrying seven lanes like the Kennedy Bridge call for a deck width of 126.5 feet, including proper widths for through lanes, a median and shoulders. The adjacent Clark Memorial Bridge deck, which is 38 feet wide, also does not meet current urban arterial design criteria, which call for a total width of 48 feet (minimum) or 70 feet (desirable) for a 4-lane roadway. The double deck Sherman Minton Bridge has three lanes in each direction with deck widths of 42 feet. The bridge has three 12 foot lanes with three foot shoulders. The Sherman Minton Bridge does not meet current urban interstate highway design criteria. Thus, these current crossings are substantially narrower than recommended by current structural and roadway design criteria, posing significant safety issues. In addition, past capacity improvements on the Kennedy Bridge have substantially eliminated shoulders on the bridge, contributing to safety problems. In fact, all three Ohio River bridges currently lack outside shoulders sufficient to accommodate vehicles in emergency situations, including disabled vehicles and crashes.

³ Research sponsored by the FHWA has shown that interchange rehabilitation projects are effective in reducing crash experience. Major projects that involved major geometric improvements to an interchange resulted in an observed 23.7 percent reduction in crash rates. [Safety Effectiveness of Highway Design Features Volume IV Interchanges-FHWA-RD-91-047 November 1992]



Level of Service A



Level of Service B



Level of Service C



Level of Service D



Level of Service E

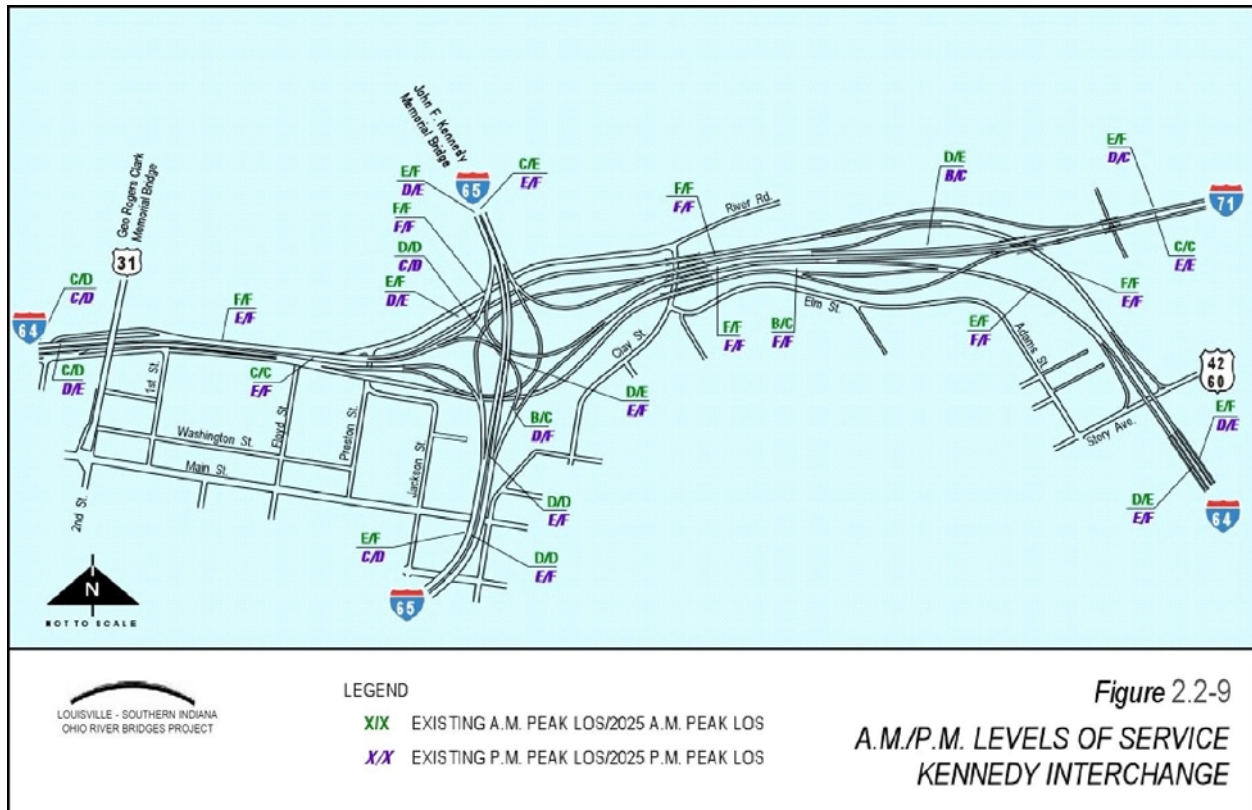


Level of Service F

Source: Highway Capacity Manual, 3rd Edition
These photos are for illustrative purposes;
roadway is not to be mistaken as US 31.

LOUISVILLE - SOUTHERN INDIANA
OHIO RIVER BRIDGES PROJECT

Figure 2.2-8
*Representative Freeway Volumes
For Each LOS Level*



2.2.5 Inadequate Cross-River System Linkage

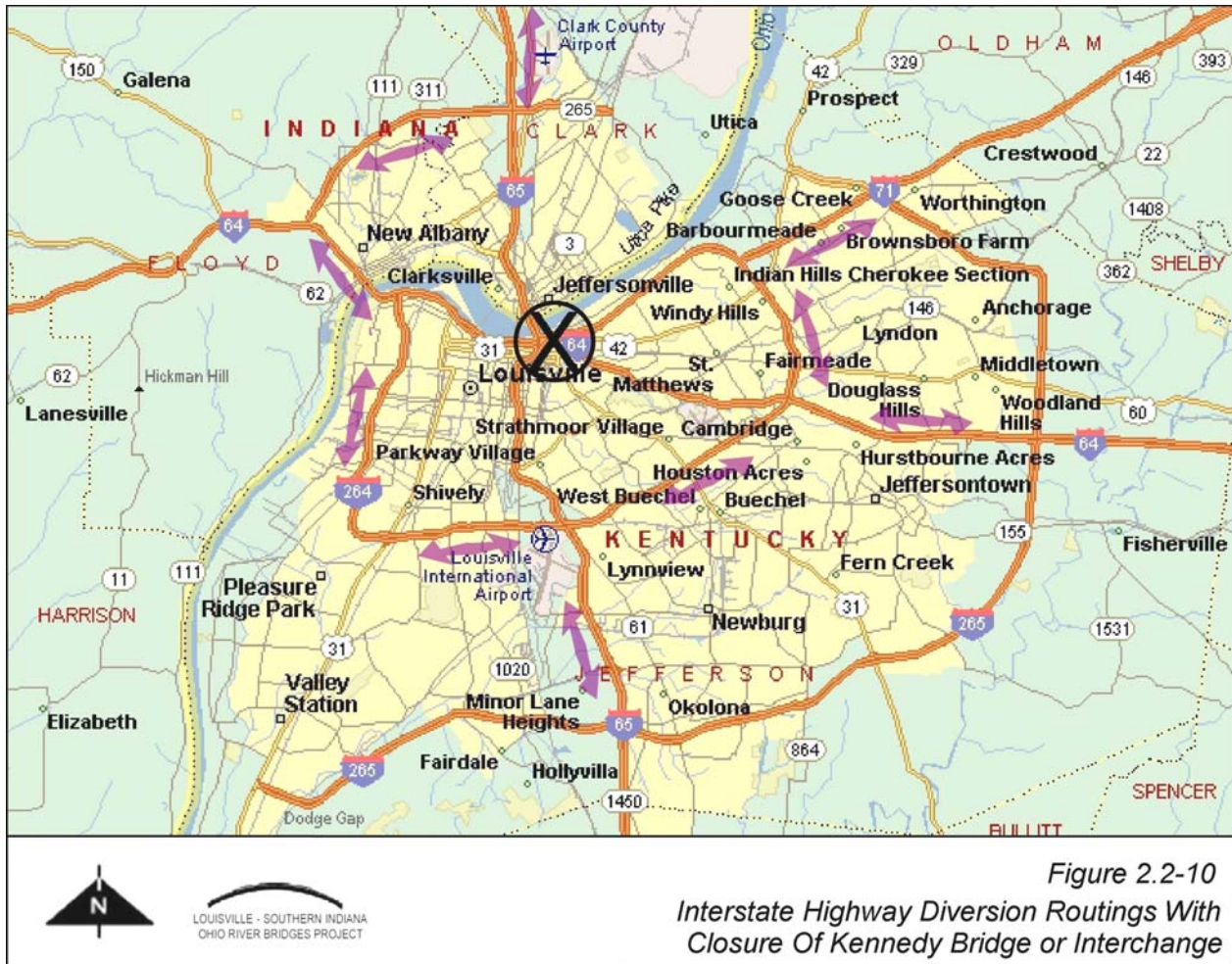
Currently, there are only two interstate freeway river crossings in the LMA. Kentucky and Indiana have made a substantial investment to construct the freeway system in the LMA, but that system provides only limited cross-river access. In particular, while the two states have invested substantially over several decades to construct the circumferential freeway (i.e. “beltway”) system, there is no cross-river system linkage in the eastern portion of the LMA. A cross-river connection on the circumferential system is provided west of Downtown Louisville via the Sherman Minton Bridge, located at the western terminus of I-264 in Kentucky and near the western terminus of I-265 in Floyd County, Indiana. However, no such eastern connection exists, either at I-264 (the “inner beltway”) or I-265 (the “outer beltway”). This lack of cross-river linkage exists despite the fact that both I-264 and I-265/KY 841 terminate near the Ohio River in eastern Jefferson County, Kentucky, and I-265/S.R. 265 terminates near the Ohio River just across the river in Clark County, Indiana—leaving an approximately five mile gap in the existing eastern circumferential freeway. This lack of a river crossing in the eastern portion of the area creates transportation system inefficiencies, resulting in additional travel time and distance for cross-river travelers in this area as all such traffic must travel west to the downtown Kennedy Bridge in order to cross the river.

Traffic currently using either I-264 or I-265 in the Eastern portions of Jefferson and Clark Counties must travel through downtown Louisville in order to cross the Ohio River. This routing can add up to 15 miles to each trip. This additional distance, along with additional delays caused by traffic congestion in the Kennedy Interchange and on the Kennedy Bridge, limits the usefulness of I-264 and I-265 for travelers with cross-river destinations. The substantial investment Indiana and Kentucky have made in constructing complementary portions of the circumferential freeway system in the Eastern part of the LMA cannot be fully realized without completion of the missing cross-river link. As the number of cross-river trips with an eastern orientation increases (including as a percentage of overall cross-river trips), the inefficiencies associated with this lack of cross-river system linkage also will increase.

The lack of river crossings other than those concentrated in the central portion of the LMA also makes the transportation system vulnerable to congestion, incidents and other disruptions that adversely affect travel on the existing crossings, particularly the Kennedy Bridge. This problem is demonstrated in the context of incident management. If a major crash or other incident occurs on the Kennedy Bridge or within the Kennedy Interchange, the lack of any viable river crossing alternatives can severely impair cross-river mobility for a large portion of the traveling public. The nearby Clark Memorial Bridge is a four-lane urban arterial bridge that is already heavily utilized and has a limited capacity to alleviate problems on the adjacent interstate system. If the Kennedy Bridge was temporarily closed or east-west access through the Kennedy Interchange was limited, a redirection of interstate highway traffic would be required. Vehicular access would be diverted to the Sherman Minton Bridge. Although an interstate bridge, it provides limited opportunities to effectively serve traffic with an eastern orientation. (See Figure 2.2-10.) Thus, an incident in this area can exacerbate the existing congestion and impede cross-river mobility throughout the LMA.

Similar considerations would apply for any major construction in the Kennedy Bridge/Interchange complex or on the other Ohio River crossings in the LMA. Because of the age and condition of the existing bridges, each will require occasional maintenance work, such as deck replacement, joint and bridge seat repairs, painting and work on steel members within the structures. These activities and more extensive rehabilitation projects would require lane reductions and/or lane closures during some portion of the work. During these periods, the traffic utilizing the other bridges likely would increase, even without the use of designated detour routes. Having a system with as much flexibility as possible, including sufficient cross-river rerouting opportunities, would improve the ability of the two states to undertake and complete routine maintenance and rehabilitation work on the existing structures. Because of the current insufficiency of alternate river crossings, any major construction on the existing bridges or in the downtown interstate complex, including improvement of the existing facilities (e.g., widening I-71 or I-64), would amplify the congestion problems, impair emergency response action and incident management and would likely result in a prolonged period of substandard cross-river mobility.

Provision of an eastern river crossing would enhance governmental responses to incidents, including crashes, emergencies, and broken-down vehicles, and would facilitate major and routine maintenance on other LMA freeways and bridges, by providing an alternate route for traffic. As mentioned previously, if any major crash or other incident occurs on the Kennedy



Bridge or in the Kennedy Interchange, the lack of any viable upriver crossing alternatives impairs cross-river mobility for a large portion of the traveling public and impairs any response to the incident. The U.S. Department of Defense also has indicated that improvements to capacity and “system redundancy” in the Louisville area, and in particular a new eastern Ohio River bridge, would be beneficial in the event that the military must deploy by highway from Fort Carson, Colorado and/or Fort Riley, Kansas, to the Port of Hampton Roads, Virginia, allowing the military to bypass recurrent or non-recurrent congestion in the Downtown area.

2.2.6 Consistency with Locally-Adopted Transportation Plans

The local governmental jurisdictions acting through KIPDA have recognized the deficiencies in the cross-river transportation system and have included two new bridges and a reconstruction of the Kennedy Interchange in the locally adopted long-range transportation plan. That plan specifically calls for a new bridge downtown, parallel to the existing Kennedy Bridge, and a new eastern bridge, connecting I-265/KY 841 in Jefferson County, Kentucky, with I-265/S.R. 265 in Clark County, Indiana. As discussed in detail in Chapter 1, KIPDA’s recommendation of two new bridges and a Kennedy Interchange reconstruction is based on years of studies, culminating

in the 1995-1996 ORMIS. This “two-bridge” recommendation has been described as “a total package of improvements to address cross-river mobility deficiencies over the long term.” Together, the elements of that recommendation constitute the careful judgment of the local community, acting through the Congressionally prescribed transportation planning process, on how best to improve cross-river mobility between Jefferson and Clark Counties in the coming decades.

The downtown Kennedy Bridge lacks sufficient capacity to handle projected future cross-river travel demand. A new downtown bridge, parallel to the existing Kennedy Bridge, has been included in the local transportation plan to provide additional lanes on the downtown I-65 crossing, essentially doubling the capacity of this over-utilized facility. Without additional capacity on the downtown crossing, daily peak period congestion on the Kennedy Bridge is expected to continue to worsen over the next twenty years. The construction of a new downtown bridge also is planned as a result of previous studies that have indicated that the design problems of the Kennedy Interchange cannot be fully resolved without additional lane capacity on the I-65 crossing. Thus, construction of a new downtown bridge has also been recommended by local transportation planners as a complement to the plan to reconstruct the Kennedy Interchange to solve the safety and congestion problems of that facility.

Local transportation plans also have recognized for many years the benefits that would be produced by providing additional cross-river access upstream of the Kennedy Bridge. Currently, the freeway system lacks any cross-river connection upstream, or east, of the Kennedy Bridge. The ORMIS report described an eastern bridge as a “valuable contributor to the overall efficiency of the regional transportation network and a highly cost-effective investment in the region’s future.” The eastern bridge recommendation, as included in KIPDA’s RMP, calls for completing the missing freeway link between the existing portions of I-265 that terminate on either side of the Ohio River in Indiana and Kentucky (also known as S.R. 265 and KY 841, respectively). This additional linkage would enhance the efficiency of the transportation system by providing an alternate route across the Ohio River for many travelers with eastern orientations and allow for better management of incidents or construction on other bridges or freeways that affect the area’s other river crossings.

2.3 Performance Measures

Alternatives to improve cross-river mobility between Jefferson County, Kentucky and Clark County, Indiana are evaluated according to several transportation performance measures that relate to the aforementioned needs. These measures are used in this EIS to determine whether, and to what extent, each of the alternatives evaluated herein meet the identified needs. The measures include the following:

Efficient Cross-River Mobility for Population and Employment Growth

- **Vehicle Hours of Travel (VHT):** This is a measure of the total number of hours of vehicle travel per weekday in the LMA, as estimated from application of the KIPDA travel

demand model. Alternatives are evaluated to determine their ability to reduce the daily number of hours of travel in the LMA.

- **Vehicle Miles of Travel (VMT):** This is a measure of the total number of miles of vehicle travel per weekday in the LMA, as estimated from application of the KIPDA model. Alternatives are evaluated to determine their ability to reduce the daily number of miles of travel in the LMA.
- **Vehicle Hours of Delay (VHD):** This is a measure of the total number of hours of travel under congested conditions per weekday in the LMA. Travel under congested conditions occurs when vehicles are not able to travel at free flow. Alternatives are evaluated to determine their ability to limit or reduce this measure of daily congestion in the LMA.

Traffic Congestion

- **Bridge Demand as Percent of Capacity:** This is a measure of the ratio of the weekday volume of traffic that desires to cross a given bridge to the design capacity of that bridge. It is the total daily vehicle demand on the bridge divided by the daily design capacity afforded by the bridge. The daily capacity is a function of the maximum LOS D traffic flow rates, the proportion of daily traffic that occurs in the peak hour of travel and the number of lanes on the bridge.

This provides a measure of the daily traffic volumes that cannot travel over the bridge at acceptable operating conditions (e.g. Kennedy Bridge demand is currently at 106 percent of its design capacity). Alternatives are evaluated to determine their ability to improve demand as a percent of capacity on the Kennedy Bridge.

- **Bridge Level of Service (LOS):** This is a measure of the degree of congestion on a particular roadway segment. LOS range from A to F, with LOS A indicating the least congestion and best traffic flow, and LOS F indicating the most congestion and worst traffic flow. Alternatives are evaluated to determine their ability to improve levels of service on the Kennedy Bridge. The book “A Policy on Geometric Design of Highways and Streets,” published by the AASHTO, states: “for acceptable degrees of congestion, freeways and their auxiliary facilities, i.e., ramps, main line weaving sections, and collector-distributor roads in urban and developing areas, should generally be designed for LOS C.” In heavily developed sections of metropolitan areas, conditions may necessitate the use of LOS D.” Indiana’s highway design criteria specify a minimum LOS C for a 20-year design (although LOS D may be used on urban reconstruction projects). For a newly constructed interstate freeway bridge with a design life of at least 50 years, a 20-year design providing a minimum LOS of C is considered necessary and prudent.
- **Kennedy Interchange Peak Hour Speed:** This is a measure of the average vehicle speed in the Kennedy Interchange during the morning (7:30 A.M. to 8:30 A.M.) and afternoon

(4:45 P.M. to 5:45 P.M.) peak hours. Alternatives are evaluated to determine their ability to improve peak hour speeds in the Kennedy Interchange.

- **Kennedy Interchange Peak Hour Throughput:** This is a measure of the amount of traffic that is able to pass through the Kennedy Interchange during the peak hour as a percentage of the total traffic demand in the interchange during that same period. It is the percentage of peak hour traffic entering the Kennedy Interchange that can pass through the interchange without experiencing undue delay or congestion, represented by stop and go traffic flow conditions or long vehicle queues on interchange roadways. If throughput is less than 100 percent of demand, traffic congestion and diversions result. Alternatives are evaluated to determine their ability to improve Kennedy Interchange peak hour throughput (i.e. raise throughput closer to 100 percent).
- **Kennedy Interchange Link Density:** This is a measure of the degree of congestion on specific roadway segments within the Kennedy Interchange. This measure is reported as the level of service, or LOS, on each individual roadway "link" within the Kennedy Interchange. Alternatives are evaluated to determine their ability to reduce congestion and improve the level of service on all segments of the Kennedy Interchange.

Traffic Safety

- **Conformity with Roadway Design Standards:** This is a measure of the conformity of a roadway facility with current roadway design standards and practices, as specified by AASHTO, INDOT and KYTC. These standards are set forth in "A Policy on Geometric Design of Highways and Streets," published by AASHTO and available for review at the local project office. Standards relate to such factors as roadway and shoulder widths, horizontal and vertical geometry, and merging movements. Alternatives are evaluated to determine their ability to comply with all current roadway design standards.

Cross-River System Linkage

- **Completion of Eastern Cross-River Transportation System:** This is a measure of the ability of an alternative to complete the cross-river transportation system in the eastern portion of the LMA and to provide alternative freeway routes across the river. Alternatives are evaluated to determine whether they provide the missing cross-river link in the circumferential freeway system in eastern Jefferson and Clark Counties and the opportunity for alternative freeway routing across the Ohio River.

Consistency with Local Transportation Plans

- **Consistency with Local Transportation Plans:** This is a measure of the consistency of an alternative with locally approved transportation plans relating to improvements in the cross-river transportation system. Alternatives are evaluated to determine their relative ability to provide the cross-river transportation improvements called for in the locally adopted long-range transportation plan.

2.4 Conclusion

Careful evaluation of the community's transportation needs has demonstrated a need for improvement in cross-river mobility between Jefferson County, Kentucky and Clark County, Indiana. Growth in the Downtown and Eastern areas of both Jefferson and Clark Counties has increased pressure on the existing cross-river transportation system, resulting in increased travel times and distances for cross-river travelers. Projections of growth through the year 2025 indicate that without any improvement in cross-river mobility, the resulting economic and system inefficiencies will continue to worsen. Congestion in the Kennedy Bridge/Interchange complex is already serious and is forecast to worsen without any improvements. Safety problems associated with the tight roadway geometry and narrow shoulders in the Kennedy Bridge/Interchange complex also hinder cross-river mobility and contribute further to the serious congestion problem in the Downtown area. Moreover, the lack of any river crossing upstream of the Kennedy Bridge in the LMA will continue to force cross-river trips with eastern orientations to incur the additional travel distance and times necessary to utilize the Kennedy Bridge. This lack of cross-river system linkage impairs the efficiency of the transportation system. Those additional cross-river trips downtown will also contribute to the worsening congestion on the existing crossings. Likewise, congestion, construction and incidents on the existing crossings, especially the Kennedy Bridge, will continue to adversely affect the entire transportation system and important governmental functions because of the lack of alternate river crossings. For the foregoing reasons, alternatives to improve cross-river mobility are evaluated in this EIS.

Consideration of potential solutions to all of the cross-river mobility needs between Jefferson County, Kentucky and Clark County, Indiana in one EIS is consistent with the requirements of the National Environmental Policy Act (NEPA). As recognized during the ORMIS process, potential solutions to a portion of the identified cross-river mobility needs may affect potential solutions to other, related needs. For example, improvements to the freeway system in the Downtown area may affect the need for, and performance of, any highway improvements in the Eastern part of the LMA, and vice versa. The evaluation of various potential solutions, or combinations of solutions, in one environmental document will allow interested parties to understand the full importance of the project and allow the project sponsors to make a fully informed decision. The potential solutions to the identified needs also may have similar or cumulative environmental impacts that should be analyzed together in one EIS to allow an informed decision on any ultimate solution or set of solutions. Because this set of needs has arisen at the same time and in the same geographic area, evaluation of the full range of potential solutions, or combinations of solutions, in one EIS will achieve the intent of NEPA. Thus, this EIS evaluates the full range of alternatives for improving cross-river mobility between Jefferson and Clark Counties, including but not limited to the ORMIS recommendation.